

**4045****BOARD DIPLOMA EXAMINATION, (C-14)****MARCH/APRIL-2019****DEEE - FIRST YEAR EXAMINATION****ELECTRICAL ENGINEERING MATERIALS**

Time: 3 Hours

Max. Marks:80

**PART-A****10x3=30M**

**Instructions:** 1) Answer **all** questions.  
2) Each question carries Three marks.  
3) Answer should be brief and straight to the point and shall not exceed five simple sentences

- 1) Enumerate the properties of low resistivity materials.
- 2) Define Conducting materials
- 3) Classify the materials based on valence electrons.
- 4) What is the difference between an Insulator and Dielectric?
- 5) List any four applications of Di-electric
- 6) What do you understand by eddy current loss?
- 7) What are the characteristics of fuse element material ?
- 8) What are the advantages of Impregnation ?
- 9) What is trickle charging ?
- 10) What are the factors affecting the capacity of batteries?

**PART-B**

**5X10=50M**

**Instructions:** 1) Answer any **five** questions.  
2) Each question carries ten marks.  
3) The answer should be comprehensive and the criteria for valuation is content but not the length of the answer.

- 11) a) Explain the effect of annealing and hardening of Copper on its electrical and mechanical properties.  
b) State the properties and applications of manganin and constantan.
- 12) a) Distinguish between copper and aluminum in any five aspects.  
b) State the properties of ACSR conductors.
- 13) a) Explain the formation of P-type semiconductors with neat sketch.  
b) Distinguish between P-Type and N-type Semiconductors in any five aspects.
- 14) a) Briefly explain about the materials added to PVC to improve its properties.  
b) State the properties and applications of Sulphur hexa Fluoride ( $\text{SF}_6$ )
- 15) a) Deduce the expression for Dielectric loss.  
b) Write the advantages and applications of Enamel Coated Copper wires.
- 16) a) Plot Hysteresis loop and identify salient points on it.  
b) Compare Soft and Hard magnetic materials.
- 17) a) Compare between Lead acid cell and Nickel Iron cell.  
b) Explain Charging of battery by constant voltage method with a neat sketch.
- 18) a) Distinguish between maintenance free battery and lead acid battery in any five aspects.  
b) Determine the ampere-hour and watt-hour efficiencies of a battery which is charged for 12 hours at 25A at an average voltage of 2.5V and is discharged in 10 hours at a load of 20A at an average voltage of 2.25V.